

January 1, 1977

TO: ALL INTERESTED IN BUYING THE ATC 610 FLIGHT SIMULATOR

WE INVITE YOU TO COMPARE THE PACER AND THE ATC 610

No doubt you have heard of the PACER, a new flight simulator recently introduced. This may sound strange, but I would encourage you to "fly" it before you purchase the 610. There is no comparison on the navigational performance. On the PACER you are a "programmer"; on the 610 you are a "pilot". All normal navigational functions are performed on the 610. On the Pacer, you must simulate the simulator. We can arrange for a PACER demonstration if you wish.

About the best way to compare two types of aircraft or simulators is to just go ahead and "fly" them. So we will compare these two machines on a cross-country flight on paper. As shown in Figure 1, we will take-off from Morristown and fly to Teterboro via the Solberg Yardley and Colts Neck VORs and the Robbinsville and Dandridge intersections in order to demonstrate the programming functions of both machines.

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AVIATION EDUCATIONAL SYSTEMS

Mid-Atlantic Distributer for Analog Training Computers, Inc.

P. S. You are invited to stop by our ATC Flight Training Center any time for a demonstration on the ATC-610. We are open everyday.

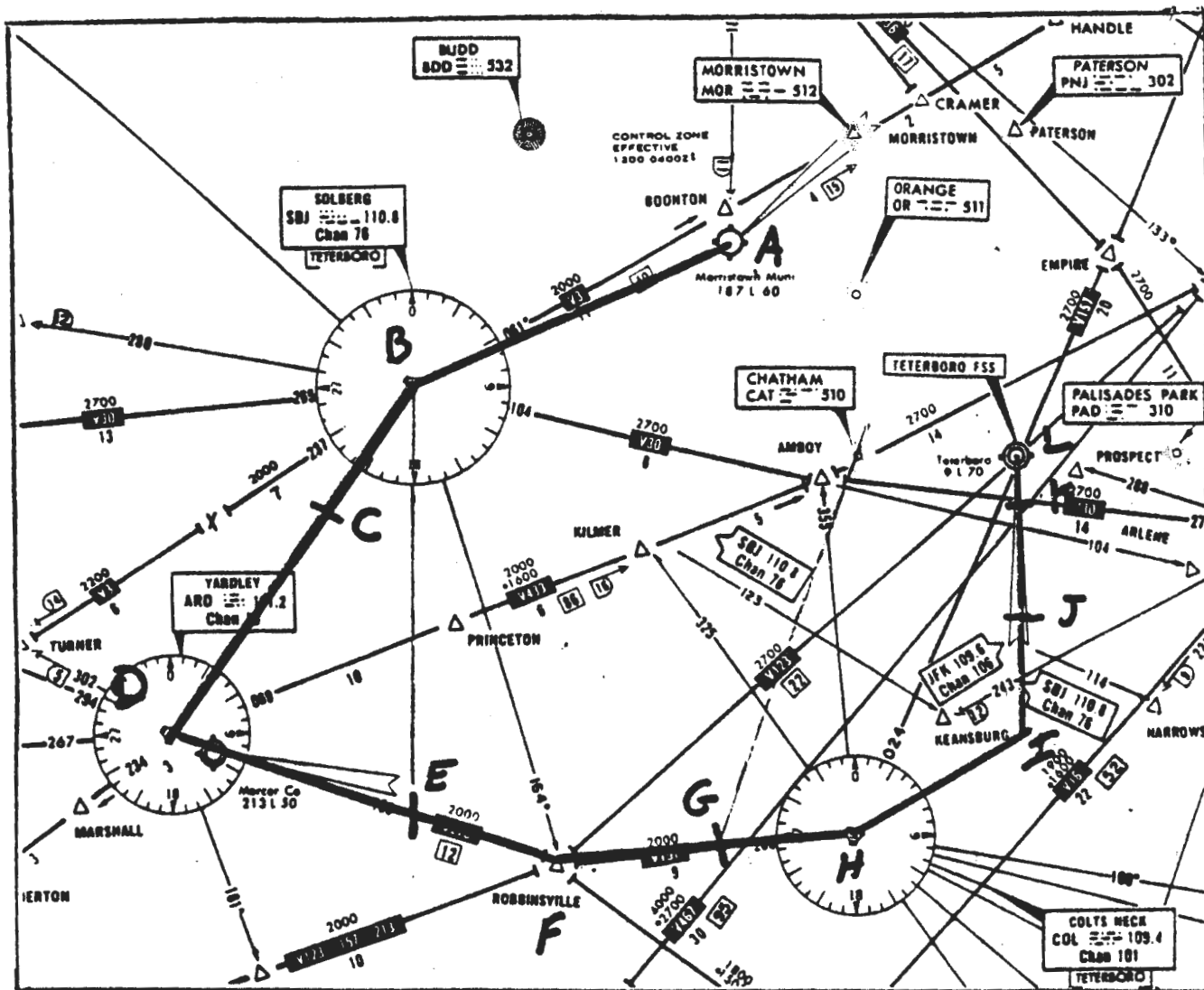


FIG. 1

The above illustration depicts both the flight plan as flown and the way the computer in the ATC 610 views it. The 610 is programmed for a given area of 50 by 80 NM by means of a program card. Any low altitude area may be programmed for the 610.

This program contains the following:

- a. 6 departure airports
- b. 6 VORTACS
- c. 6 airports will full ILS capability (including front and back course; co-located marker beacon and ADF; multiple selection of runway headings at any field elevation)
- d. 175 possible ADF stations

All of the above NAV aids are stored in the 610's memory--any combination can be used simultaneously.

Dandy Intersection

When Established on COL Rad. 060 Can't be done by tuning in Localizer

Set Localizer 110.3

Intercept

or

Fly 5.9 DME on Rad. 050 COL

Turn on Marker Beacon

Tune In ADF to LOM 201

Set Localizer 110.3

Fly 5.9 DME on Rad. 060 COL

Turn on Marker Beacon

Can not use ADF with LOM

Set Localizer 110.3

Reprogram Simulator as in the 11 steps described in Step "C"

Fly back to Check Point "I"

Reset Clock

Fly ILS

You are now Programed as shown in

Fig. 2-4

J. Outer Marker light activated

ADF needle reversal

K. Middle Marker light activated

L. Field in sight light activated

Outer Marker light activated

No ADF function

Middle Marker light activated

Field in sight light activated

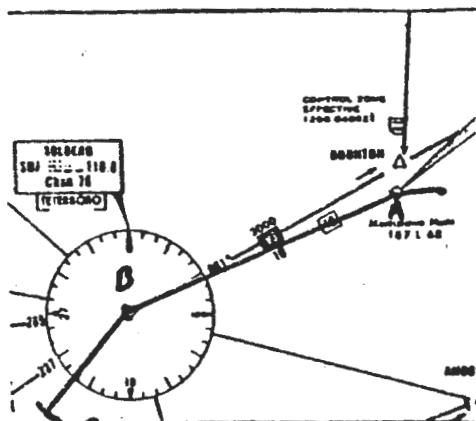


FIG. 2-1

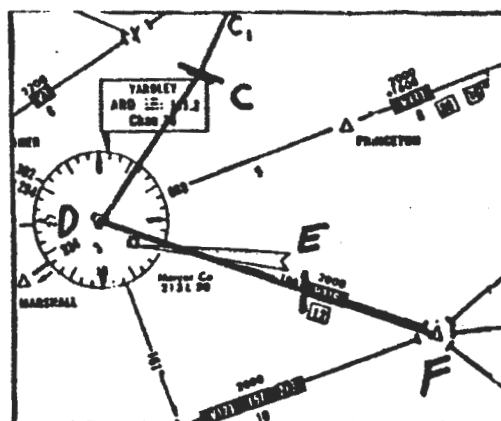


FIG. 2-2

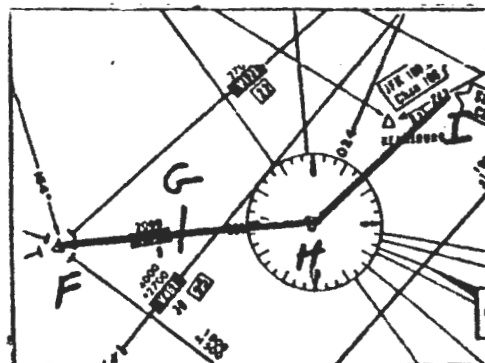


FIG. 2-3

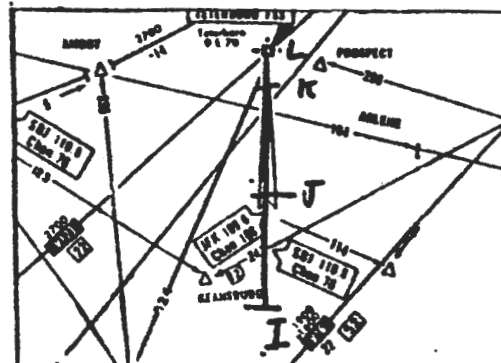


FIG. 2-4

The above 4 figures illustrate the way which the PACER would "see" the flight and the way that it must be re-programmed 4 separate times. The PACER is a position-based simulator, however, for an area around a single nav aid it is impossible to ever use 2 nav aids simultaneously.

To perform this flight on the PACER we had to completely re-program the simulator, a distracting and tedious process, four separate times, and even then we could not:

- Check our position at Check Point E with SOLBERG VORTAC.
- We could not find Robbinsville Intersection with the 141 degree radial of the SOLBERG VORTAC.
- We could not find Robbinsville Intersection with CHATHAM ADF.
- We could not find Check Point G with CHATHAM ADF or SOLBERG VORTAC.
- We could not find DANDY Intersection without DME.
- We could not use a co-located outer marker and ADF
- We could not set up the proper wind conditions.

After flying this example flight, it is obvious that the PACER system is far behind in technology and that the MARK II will never be capable of simulating two air navigation aids simultaneously without a complete redesign of its computer systems. This is truly not the state of the art ¹⁰ stationary micro-simulator systems.

In this and many other respects the PACER MARK II is limited because it is an attempt at doing "digitally" what is best done with a combination of Analog and Digital technology. - - - ATC is a Subsidiary of EAI (Electronics Associates, Inc) EAI is the acknowledged world leader in Hybrid Computer Technology - - and Hybrid the merger of Analog and Digital Technology.

The following is the programming instructions to perform the cross-country instrument flight on both the ATO 610 and the PACER Mark II.

ATC-610

PACER

A. INITIAL CONDITIONS

1. Morristown Airport.
2. Wind 210 @ 7 kts
3. Field Elev. 187'
4. Runway 23
5. Tune in Solberg VORTAC
6. Xponder code as needed
7. Take-off and climb to 2,000'

ATC-610

PACER

1. SET COMM Rcv to MOR Twr - 132.2
1. SET VOR/DME - XPONDER (x5xx)

STEPS REQUIRED: 1

SET for 10.7 mi DME (Can't be done)

SET for 12 mi. DME - XPONDER (2xxx)

SET for Rad. 325 (Can't be done)

SET for Rad. 326:

a) SET 315 (xx7x)

b) ADD 011 (xxx2)

Total = 326

DIAL OBS Rad. 145

TURN On VOR Sw. on Audio Panel.

CAUTION: Damage will occur if more than one NAV function sw. is pressed.

DEPRESS IDENT BUTTON

FLY TO AIRPORT.

You are now positioned at Morristown Airport and the PACER is programmed for the airspace shown in Fig. 2-1.

STEPS REQUIRED: 12

2. SET 210°

SET 7 kts

3. Set Altimeter to 187'

4. Taxi to R 23

5. SET NAV 110.8

Dial OBS 'till needle centers

6. SET XPONDER CODE for TEB ILS.

a) for LOM @ 1,000' 05xx

b) for RWY 36 xx10

7. Take-off & climb to 2,000'

3. Solberg VORTAC

Dial OBS Rad. 216; fly outbound

2. Can't be done.

SET Sw #1 for 270° @ 15 kts

or

SET Sw #2 for 180° @ 10 kts

3. SET COMM Rcv: a) 0° 118.0
b) add 200' Freq. xxx.2
c) sub. 13' by set Alt.
Total = 187'

4. Taxi to R 23

5. SET NAV 110.8 (NAV head is a "dummy")

Note: NAV system was tuned in at step A-1 to locate the airport

6. (Can't set ILS XPONDER CODE at this time as XPONDER req'd for navigation See Step A - 1)

7. Take-off & climb to 2,000'

Dial OBS Rad. 216; fly outbound

C. Change to Yardley VORTAC

Set NAV to 111.2

Dial OBS & center needle

D. Yardley VORTAC - (Turn left to V276)

Dial OBS to 109

Fly outbound

E. Cross check position from Solberg.

Set NAV to SBJ 110.8

Dial OBS - center needle (180 Rad.)

F. Robinsville Intersection

Use 164 Rad. of SBJ

or

Use 12 DME on V276.

Turn Left - Fly V151

Set NAV 109.4 (COL)

Dial OBS - center needle

Fly inbound COL

G. Cross check position from Chatham ADF

Set ADF to CAT 510

H. Colts Neck VORTAC - (Turn left to Rad. 060)

Dial OBS Rad. 060

Fly outbound

Slow to approach speed

Set NAV to 111.2 (NAV head is a "dummy")
Note that the DME reading is 5 mi from Solberg and that Rad. is 216 .
Measure on chart the distance to Yardley from check point "C". (8 mi.)
Set DME at 8 mi. (Can't set DME 8 mi.)
Set 12 mi. - XPONDER CODE: 2xxx
Set VOR function: XPONDER code x5xx
Set 216 Rad. (Can't set 216 Rad.)
Set 214 Rad.

a) Set 180 - Code xx0x

b) add: 034 - Code xxx6

This totals 214 .

(Note time at Check point "C")
We are now at C₁ as shown on Fig. 2-2.
Fly back to Check point "C".
Reset clock for Check point "C".
Fly inbound to Yardley.

Dial OBS to 109

Fly outbound

Can't be done as Solberg does not exist in this present program mode. (Two VOR's cannot exist simultaneously on the PACER)

Can not be done with SBJ

Use 12 DME on V276

Turn Left - Fly V151

Reprogram simulator as in the 11 steps described in Step "C"

Fly back to check point "F".
Reset clock; fly inbound.

Can't be done on the Pacer

Dial OBS Rad. 060

Fly outbound

Can not be done on Pacer
Airspeed Indicator is a "dummy"
Does not read true speed of simulator